Athena Radar-Responsive Tag - A CID/BFT Solution

FACT SHEET

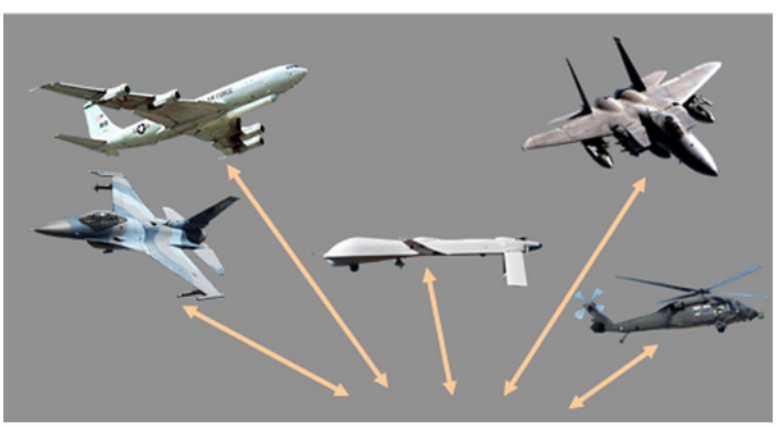
Helps to Eliminate Friendly Fire

Sandia National Laboratories, in partnership with General Atomics and Sierra Monolithics, has developed Athena for the U.S. Army CERDEC and the U.S. Air Force Air Warfare Battlelab. Athena is a radar-responsive tag that has been successfully demonstrated in combat identification (CID), Blue Force Tracking (BFT), and other tagging, tracking, and locating (TT&L) applications. Athena is placed on a friendly ground asset, and pilots interrogate the tag during normal radar operations. Athena offers improved situational awareness and a real-time option for the pilot to avoid mistakenly engaging a friendly force (fratricide, or friendly fire).

Proven Technology

Athena has been successfully demonstrated with several radar systems and platforms. Athena tags have been evaluated at the Coalition Combat Identification (CCID) Advanced Concept Technology Demonstration (ACTD) Military Utility Assessment (Exercise Urgent Quest) in the Fall of 2005 and the U.S. Army C4ISR on the move exercise at Ft. Dix, New Jersey, in July 2004.

Radar Display



Radar Display

Attack Platforms

- USAF F-15E Strike Eagle
- RDAF F-16 Block 15
- USAF F-16 Blocks 30/40
- USN F/A-18 Hornet
- USMC AV-8B Harrier

Surveillance Platforms

- Predator UAV
- Sandia SAR
- Joint STARS

No modifications to radar hardware are required. The tags are compatible with existing aircraft radar. However, simple modifications to radar software enhance system performance.

Radar-Responsive Tags

Radar tags can be used for many applications such as combat identification, blue-force tracking, search and recovery, “offset” precision targeting, special operations,and unattended ground sensors.

Sandia National Laboratories

Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy under contract DE-AC04-94AL85000.

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Innovative Technologies

Sandia has developed radar-responsive tag techniques that demonstrate:

Blue Force Tracking

- **Autonomous operations via CONOPS-dependent embedded software.**
- **Dual-band design supporting both X-band and Ku-band radars in a compact package.**
- **Multiple radar modes including Ground Moving Target Indication (GMTI), Air-to-Air, and Synthetic Aperture Radar (SAR).**
- **Operation at the radar's inherent operating range.**
- **Near zero latency (immediate response to radar operator).**
- **Low probability of unintentional detection and intercept.**
- **Tracking of stationary and moving assets.**
- **Ability to geo-locate a tag relative to a SAR image or GMTI map.**
- **Data uplink capability from ground to radar using tag's serial input port.**
- **Operation using internal batteries or external DC power.**
- **External serial data port.**

Combat Search and Rescue

Combat Identification

Mission

Sandia has developed a variety of different tagging systems. Sandia's radar tag work emphasizes the technical areas of:

- **Tag-system concept development**
- **Development of miniaturized, pre-production tag prototypes**
- **Identification and facilitation of any necessary radar integration**
- **Flight-test demonstration and data analysis**
- **Transition to production**

Installation on M3 Bradley

Experience

Sandia has over 15 years experience in the design and development of TT&L systems and devices. Sandia has developed radar-responsive tags for a wide variety of customer and flight platforms from UHF to Ku-band.

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